In 2009, the Washington State Department of Agriculture awarded $2,628,769 to 14 projects:

Organization: Washington State University - Tree Fruit Research & Extension Center

Project Title: *Apple Integrated Pest Management (IPM) Transition Project*

Award Amount: ($250,000)

Project Abstract: This project will transform IPM practices in apple, and impact practices in pear and cherry, through accelerated adoption of new technologies. It will improve real-time pest management decision-making and document and communicate changes in practices, attitudes, and perceptions of growers, IPM consultants, and farm workers. Communication of research-based knowledge, via a variety of proven and effective educational venues (meetings, workshops, schools, field days, seminars, and focus groups) will be the primary method used to change practices. Additional educational components will be added to the Washington State University (WSU) Decision Aid System along with the development of new or enhanced tools to facilitate real-time IPM decision-making. Surveys, traditional and using Turning Technologies audience response system, will provide data to document changes in perspectives and practices of growers, IPM consultants and farm workers. The impact of this project, through accelerated adoption of new IPM technologies by WA growers and crop consultants, will be a safer food supply, safer work environment for farm labor, and reduction of negative impacts of pest control activities on WA environments. Economic benefits to the WA tree fruit industry will derive from better IPM programs (lower losses due to pests) and a sustained or increased access to foreign markets.

Organization: Washington Apple Commission

Project Title: *Global Retail Training in Produce Layout Design & Handling*

Award Amount: ($193,001)

Project Abstract: By the time Washington Apples, Northwest Pears, Northwest Cherries and Washington State Potatoes reach the retail shelves in foreign markets, they are high value items that, if mishandled, can cause significant losses to the store's produce department. This makes retailers hesitant to handle the product and in turn can mean limited opportunities through these important market sales channels.

The Washington Apple Commission (WAC) requests Specialty Crop funds to be used to provide training to key retailers in at least six emerging markets (identified as Hong Kong and China, India, Mexico, Russia – Western, Thailand, and the Middle East - Dubai) in produce department layout design and produce handling, including follow-up display contests and evaluations. Training will be preceded by a store visit so that consultant can understand strengths/weaknesses of the chain's current approach. To strengthen the training, in-country representatives will work with the Produce Management Association (PMA) consultant and the retail chains to conduct produce department display contests to allow the participating retailers to incorporate the training into practical applications.

The overall goal of the layout design and produce handling training is to increase the annual sales of our products to the participating retailers by 10% through increasing their profitability/reducing the risk on our products as well as leveraging the goodwill generated by the "value-added" benefits provided by the training.

Organization: Ecotrust

Project Title: *Increasing Efficiency and Market Access with FoodHub*

Award Amount: ($250,000)

Project Abstract: FoodHub is an online directory and marketplace that makes it easy and efficient for buyers and sellers of regional food to find one another and conduct business. The project directly addresses the priority area of enhancing the competitiveness of specialty crops by resolving distribution and business bottlenecks that currently limit their commerce.

The project's objectives are to: 1) Provide specialty crop producers a simple way to provide general information about their business and market themselves, their stories, and their products; 2) Provide food buyers a simple way to provide general information about what they typically buy (allowing specialty crop producers to do market research), access information about specialty crop producers, and order specialty crops based on specific requirements (e.g. certification, proximity, distribution model, and price); 3) Diversify and create new market opportunities for specialty crop producers by increasing the number and types of food buyers purchasing their products; and 4) Increase specialty crop producers' total volume or dollar value of sales.

This project is a multi-state project between Washington and Oregon.

Organization: Washington State Horticultural Association

Project Title: GRAS^{2}P: Growers Response to Agriculture, Safe, and Sustainable Practices

Award Amount: ($195,000)

Project Abstract: The Washington State Horticultural Association (WSHA) is addressing food safety, education, and environmental concerns through implementation of GRAS^{2}P: Growers Response to Agriculture, Safe, and Sustainable Practices. GRAS^{2}P is a Washington tree fruit industry grower-based effort for audit readiness and establishment of standards for sustainable practices. Project resources will be used to 1) provide Washington tree fruit growers with educational opportunities to increase their knowledge of and improve their sustainable practices in the areas of soil and water management; 2) assist a minimum of 350 farms to be prepared for third-party food safety audits; 3) identify/modify a grower-friendly database system facilitating organization and storage of on-farm documentation regarding safe and sustainable practices used in the orchard; 4) develop bilingual, multimedia educational materials to support both hands-on grower education and to communicate to consumers the responsible and sustainable practices applied within the tree fruit industry; and 5) extend the hard copy version of GRAS2P workbook and materials to a web-based version usable via computer and/or PDA. Growers participating in GRAS^{2}P will be prepared to pass a domestic food safety audit (i.e. USDA GAP) and/or an export food safety audit (i.e. GlobalGAP) as well as undertake initial documentation of baseline sustainable practices utilized in their orchard.

Organization: Washington State Department of Agriculture – Domestic Marketing Program

Project Title: *Farm-to-School: Building New Markets for Specialty Crops in Schools*

Award Amount: ($250,000)

Project Abstract: This project will increase the market opportunities for specialty crop producers by reducing barriers to institutional sales, especially to schools. Building on work that has already been done, the Washington State Department of Agriculture (WSDA) Domestic Marketing Program will collaborate with a number of partners in Washington, Oregon and Minnesota on projects to expand the market for specialty crops in school and prepare farms to successfully meet the institutional demand for

specialty crops grown in the Northwest. All projects are designed to address needs identified in our work on farm-to-school and direct marketing in Washington.

To accomplish these goals, WSDA will: develop an online toolkit and conduct farm-to-school workshops for foodservice buyers and staff on how to purchase and prepare local fruits and vegetables; provide classroom resources to educate students about the benefits of eating fruits and vegetables; conduct grower trainings to assist specialty crop producers in selling to institutional markets; develop resources and hold events to help farmers to understand and prepare for Good Agricultural Practices (GAPs) food safety certification as required by many schools and foodservice companies; and survey farmers and processor to inventory the current capacity for post-harvest processing required to meet the school foodservice market.

Organization: Washington State University

Project Title: *Cut flowers: Developing Sustainable Insect Management Techniques and Marketing Strategies, Including the Underserved Minority Hmong Farmers*

Award Amount: ($245,003)

Project Abstract: While cut flowers are produced in all 39 counties in Washington; the industry remains underserved by the research community. As a result, Washington's cut flower industry has fragmented into large bulb producing companies and small-scale, fresh-market, growers including the Hmongs who dominate the 114 farmers market venues. In King County alone, they farm over 480 acres of high-cash value, cut flowers. Their livelihood is tenuous, threatened by cheap imports, recent historic level floods and a cadre of pests including flea beetles, cucumber beetles, and the virus vectors, aphids and thrips. Their immediate needs include a practical, sustainable approach to controlling arthropod pests, assistance in developing an industry-wide, cost accounting prediction model to value their product and long-term strategic planning for their industry. At the same time their resourcefulness and low cost inputs may offer solutions to the cut flower industry as a whole. The results from this project will provide Washington's entire cut flower industry with a synoptic list of the most effective arthropod management techniques for both conventional and organic production and a valuation-modeling tool to predict production cost and estimate future pricing for the cut flower industry.

Organization: Washington Wine Commission

Project Title: Washington Wine Promotion in Emerging Markets

Award Amount: ($75,000)

Project Abstract: The Washington Wine Commission (WWC) will host trade tastings, educational seminars and "Washington Wine Month" By-the-Glass promotions in India and Mexico. The Washington wine industry has identified enormous potential for export growth to these two emerging markets. The objective of this project is to further develop awareness of Washington wines by educating importers and buyers about the quality and diversity of Washington wine, which will ultimately increase demand for Washington State's highest value specialty crop product.

This project will include trade tastings that will allow interested buyers to meet with Washington wine producers to develop their business relationships and generate sales. In addition, an educational seminar will allow the WWC to educate buyers, journalists, wine educators and key market influencers about the quality and diversity of the Washington wine industry. Finally, the by-the-glass promotion will aid in bolstering sales for existing restaurants and retailers that list Washington wine products and would promote consumer awareness of Washington wine. The WWC will partner with hotel contacts to secure venues for the tastings and seminars in addition to working with a broader network of trade contacts and USDA consultants to promote the event and to recruit participants for the by-the-glass promotions.

Organization: Pear Bureau Northwest

Project Title: *Healthy Fruits Lead to a Healthy Family*

Award Amount: ($220,000)

Project Abstract: The Northwest tree fruit groups, led by Pear Bureau Northwest, will conduct a series of in-store promotions and health-related consumer outreach events with the top two national retailer chains in Mexico: Wal-Mart and Soriana. *Wal-Mart Promotion* – Pear Bureau Northwest will use Wal-Mart's in-store TV to communicate a health message about apples, pears and cherries and the importance of these fruits for a healthy diet and lifestyle. Sampling activities will be conducted to support the "Healthy Fruit Leads to Healthy Families" promotion. *Soriana Promotion* – Pear Bureau Northwest will conduct consumer outreach events or "nutritionist workshops" for consumers at select Soriana stores that will be held either in-store or outdoors on the store property. Sampling of the fruit during the promotions may also be organized.

Organization: Washington State University

Project Title: *Increasing Profitability with Organic Orchard Floor Management Alternatives*

Award Amount: ($157,526)

Project Abstract: Tillage for weed control is widely used among organic orchardists in Washington, the dominant organic apple and pear production state in the US. Tillage is generally effective for weed control and accelerates organic nutrient release. Over time, tillage is implicated in declining fruit size, higher nutrient input demand, and loss of soil organic matter, ultimately jeopardizing organic certification. WSU will test and refine two systems, proven beneficial in previous research, to improve economics and environmental impact relative to tillage: *Organic Herbicide* and *Mulch*. All three systems will be assessed as follows: 1) measure improvements in tree performance; 2) compare changes in soil organic matter; 3) evaluate standard fruit quality measures and nutritional quality (e.g. phenolics); 4) build an economic model to determine the most profitable system; and 5) codify for stakeholders the tips, barriers and pitfalls of implementing the best system.

The experiment will be conducted in five commercial organic orchard blocks ('Gala', 'Golden Delicious', 'Fuji' and 'Granny' apple, and 'D'Anjou' pear) in central Washington with differing weed and soil conditions to test the robustness of the alternatives. The three systems will be applied as randomized replicated full length rows, allowing for evaluation of fruit on a commercial packing line.

Organization: Washington State University

Project Title: *Stem Number, Tuber Set and Size Distribution Relationships for Specialty Potato Cultivars*

Award Amount: ($250,000)

Project Abstract: Tuber set (number) and size distribution can be optimized for a particular market (seed, fresh, processing) by manipulating the average number of stems per seedpiece without affecting overall yield. Stem number per seedpiece increases with the physiological age of a seed lot, which in turn increases with the accumulation of degree days during maturation of seed-tubers in the field (post vine kill) and in storage. Since the values of seed, fresh-market and processing potatoes are dictated in part by the specific array of tuber size classes, manipulating tuber size profiles by varying the physiological age of seed lots can significantly affect returns. The aging responses of seed-tubers to accumulated degree days in storage and the target stem number for a particular size distribution are cultivar-dependent. Handling and storage recommendations to optimize stem numbers and tuber size distributions for russet-skin processing cultivars were recently established by my program. The Washington industry has indicated a need to complete similar research for specialty potato cultivars important to the fresh market.

Accordingly, this research will characterize stem number and tuber set relationships and will identify target stem numbers and associated handling and storage protocols to optimize tuber size distribution and maximize value for selected specialty cultivars.

Organization: Washington State University

Project Title: *Determining the benefits of cane burning to red raspberry in the Pacific Northwest*

Award Amount: ($128,932)

Project Abstract: This project will measure the effects of two currently-registered herbicides for cane burning (carfentrazone and oxyfluorfen) in four red raspberry cultivars. Data generated will be: 1) Effectiveness of the products for managing primocanes, including the percent of initial control, height and diameter over the summer, and final primocane count at the end of the season and re-growth over time; 2) Injury to floricanes, including visual symptoms and berry yield; and 3) Weed control. Raspberries of the four cultivars currently under production in grower fields will be identified for inclusion in the study. Treatments will include a residual herbicide (diclobenil) applied to dormant raspberries, followed by cane burning products (carfentrazone or oxyfluorfen). Treatments will be diclobenil only, cane burn only, diclobenil + cane burn, and non-treated (six total treatments). Weed control and primocane growth will be monitored periodically over the course of the summer. Plots will be machine harvested at least ten times during each season, with berry yield recorded. At the end of the season, final primocane measurements will be collected. The project will be conducted during 2010 to 2012, with the same plots receiving the same treatments in each of two years.

Organization: Washington State University

Project Title: *Sustainable Disease Control to Reduce Cost and Risk in Potato Production*

Award Amount: ($249,920)

Project Abstract: Washington farmers rely on soil fumigants to control Verticillium wilt in potatoes. While these fumigants are highly effective, an alternative is needed because of increasing regulatory, economic, and market pressures. Green manures have potential to replace soil fumigants for soilborne disease control in potatoes while also improving soil quality. However, lack of the knowledge of the practice prevents widespread adoption by farmers. The goal of this project is to develop and implement a green manure system that suppresses soilborne pests in potatoes, reduces/eliminates reliance on soil fumigation, and enhances the competitiveness of farmers by reducing their production costs. Specific objectives are to 1) Determine the properties of green manures critical to suppressing *Verticillium dahliae*; 2) Determine the primary mechanism(s) of the suppression; and 3) Train farmers to use green manures effectively. Research will include field, pot, and greenhouse experiments to determine the green manures with the greatest potential to suppress target pests. The mechanisms of suppression will be investigated in further lab and greenhouse work. Farmer training will take place in field days, demonstrations, workshops, and online. If green manures could be used in place of fumigation, Washington's potato producers could save $10+ million each year.

Organization: Washington State University

Project Title: *Homeowner Pest Education*

Award Amount: ($64,100)

Project Abstract: Washington State is the leading state producer of apples, pears, and cherries with over 200,000 acres of these specialty crops. Annually, these crops contribute over $2 billion dollars to the state's agricultural economy. While these tree fruits are of extremely high value, consumers in domestic

and foreign markets do not tolerate fruit damaged by codling moth and western cherry fruit fly. These fruit pests are often found in backyard trees and can serve as a reservoir of pests that spread to commercial orchards. Currently, commercial growers are making the transition away from the broad-spectrum organophosphate insecticides to more environmentally friendly management strategies to control these pests within their orchards. As growers continue the transition and key organophosphate insecticides are removed from the market, they experience addition challenges in controlling key pests that originate outside the orchard. This project will educate backyard fruit growers about these pests and how they affect commercial orchards. It will demonstrate viable low risk methods for homeowners to control codling moth and cherry fruit fly that infest backyard fruit trees, and evaluate the impact proper management of backyard fruit trees has on the spread of these pests to adjacent commercial orchards.

Organization: Cascade Harvest Coalition

Project Title: *Washington Specialty Crop Farmer-Buyer Trade Meetings*

Award Amount: ($249,920)

Project Abstract: The Washington Specialty Crop Farmer-Buyer Trade Meetings is a series of 30 networking and educational meetings that will connect local specialty crop producers with local retail and institutional buyers and educate both producers and buyers on how to communicate better. The goal of the meetings is to increase specialty crop sales in Washington by facilitating strong, long-lasting, successful business producers over the three year project: one Farmer-Chef Connection conference, which is the largest specialty crop trade meeting in the state; five Farm-To-Table workshops, which are regional workshops that tackle regional issues facing specialty crop farmers; and four Meet & Greets, which are smaller, informal specialty crop product trade shows. New sales connections made at the trade meetings are expected to generate at least $1 million dollars per year in additional specialty crop farmer income. The collaborative planning team assembled to organize these trade meetings has ample experience planning and facilitating successful trade meetings and building farmer-buyer sales relationships.
